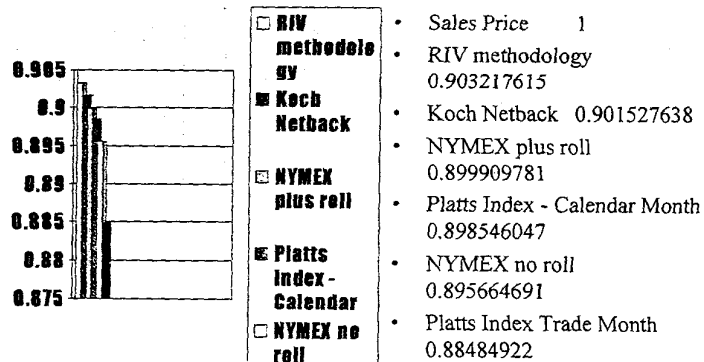


REQUEST #5

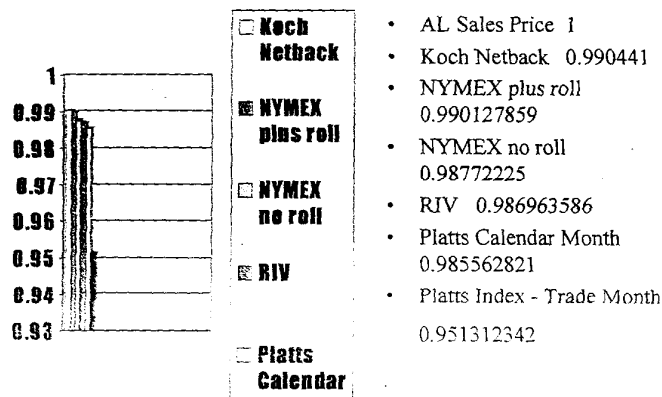
Oil Price Correlations

Index comparisons with arm's-length prices

HLS - Heavy Louisiana Sweet

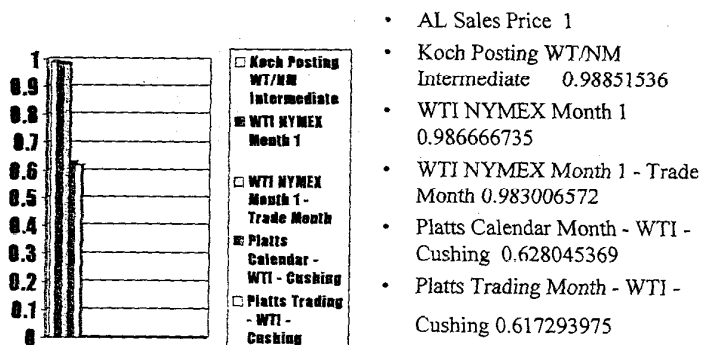


El - Eugene Island



- AL Sales Price 1
- Koch Netback 0.990441
- NYMEX plus roll 0.990127859
- NYMEX no roll 0.98772225
- RIV 0.986963586
- Platts Calendar Month 0.985562821
- Platts Index - Trade Month 0.951312342

New Mexico Intermediate



- AL Sales Price 1
- Koch Posting WT/NM Intermediate 0.98851536
- WTI NYMEX Month 1 0.986666735
- WTI NYMEX Month 1 - Trade Month 0.983006572
- Platts Calendar Month - WTI - Cushing 0.628045369
- Platts Trading Month - WTI - Cushing 0.617293975

Chidester, Phillip

From: Chidester, Phillip
Sent: Tuesday, November 05, 2002 4:52 PM
To: Vogel, Kenneth
Subject: FW: Correlation of AL & NAL sales prices for 40 leases in each of EI (St James), HLS (Empire) and WTI (Permian-NM) areas and market centers.

Importance: High

After getting the definitions for the pricing, I found I need to revise the correlation for EI, HLS, and Permian for Platts Index - Trading Month since it actually occurs two months prior to the sales period instead of the one month I used.

-----Original Message-----

From: Chidester, Phillip
Sent: Monday, November 04, 2002 4:54 PM
To: Vogel, Kenneth
Subject: Correlation of AL & NAL sales prices for 40 leases in each of EI (St James), HLS (Empire) and WTI (Permian-NM) areas and market centers.
Importance: High

The period covered is for AL sales is 01/98 through April 2002, NAL sales are covered for 09/01 through 04/02 when identified on the new 2014. There were no NAL sales in the Permian Basin sample of 40 leases that I used. The RIV Methodology used is the new oil rule that started June 1, 2000. Are there additional indexes you want to use in the correlation analysis? See Excel spreadsheets below...



EI Monthly



EI Monthly



HLS Monthly



HLS Monthly



Permian Monthly

Arm's-length Sales ..on-Arm's-length SaArm's-length Sales..on-Arm's-length S.. Arm's-length S...

Correlation analysis tool in Excel

This analysis tool and its formulas measure the relationship between two data sets that are scaled to be independent of the unit of measurement. The population correlation calculation returns the covariance of two data sets divided by the product of their standard deviations:

You can use the Correlation tool to determine whether two ranges of data move together, that is, whether large values of one set are associated with large values of the other (positive correlation = 1.0), whether small values of one set are associated with large values of the other (negative correlation = -1.0), or whether values in both sets are unrelated (correlation near zero).



Thanks!

Phillip R. Chidester
Petroleum Engineer
Office of Enforcement
Associate Director
Phone: 303-231-3569
Fax: 303-231-3362

Tracking:

Recipient

Vogel, Kenneth

E.I - Monthly - Arms - length - Sales - p

<u>AL Sales Price</u>	
AL Sales Price	1
Koch Netback	0.9904415
Platts Index - Trade	0.951312342
NYMEX plus roll	0.990127859
NYMEX no roll	0.98772225
RIV	0.986963586
Platts Calendar	0.985562821

El_Monthly_Arm_s_length_Sales_p

Sales Mo	AL Sales Price	Koch Netback	Platts Index - Trade Mo	NYMEX plus roll	NYMEX no roll
Jan-98	\$15.18	\$15.27	\$17.27	\$15.27	\$15.54
Feb-98	\$14.51	\$14.39	\$15.38	\$14.43	\$14.68
Mar-98	\$13.29	\$12.81	\$14.49	\$12.87	\$13.15
Apr-98	\$13.71	\$13.20	\$12.97	\$13.10	\$13.57
May-98	\$13.08	\$12.34	\$13.51	\$12.52	\$12.96
Jun-98	\$11.71	\$11.32	\$13.67	\$11.44	\$12.30
Jul-98	\$12.06	\$12.00	\$12.79	\$12.00	\$13.02
Aug-98	\$11.76	\$12.14	\$13.21	\$11.99	\$12.51
Sep-98	\$13.41	\$13.62	\$12.61	\$13.59	\$14.00
Oct-98	\$12.43	\$13.13	\$13.48	\$13.07	\$13.34
Nov-98	\$11.00	\$11.67	\$13.61	\$11.78	\$11.97
Dec-98	\$8.93	\$9.57	\$12.06	\$9.72	\$10.06
Jan-99	\$10.36	\$10.87	\$10.05	\$10.84	\$11.35
Feb-99	\$10.20	\$10.63	\$11.17	\$10.67	\$10.84
Mar-99	\$12.64	\$13.30	\$10.83	\$13.32	\$13.45
Apr-99	\$15.27	\$15.75	\$12.80	\$15.84	\$15.94
May-99	\$16.17	\$16.38	\$15.52	\$16.37	\$16.33
Jun-99	\$16.07	\$16.37	\$16.26	\$16.51	\$16.25
Jul-99	\$18.09	\$18.16	\$16.00	\$18.34	\$18.41
Aug-99	\$19.40	\$19.76	\$18.40	\$19.84	\$19.94
Sep-99	\$21.99	\$22.89	\$20.36	\$23.01	\$23.09
Oct-99	\$21.14	\$22.04	\$22.41	\$21.94	\$21.75
Nov-99	\$23.47	\$24.35	\$22.26	\$24.20	\$23.94
Dec-99	\$24.77	\$25.71	\$23.75	\$25.69	\$25.44
Jan-00	\$24.81	\$27.03	\$25.41	\$27.37	\$26.43
Feb-00	\$26.73	\$28.77	\$25.34	\$28.72	\$27.64
Mar-00	\$27.28	\$29.95	\$27.73	\$29.91	\$28.67
Apr-00	\$24.69	\$25.80	\$29.02	\$25.99	\$23.92
May-00	\$27.15	\$28.29	\$24.37	\$27.91	\$27.04
Jun-00	\$29.81	\$30.79	\$27.20	\$30.93	\$30.54
Jul-00	\$28.79	\$30.28	\$30.26	\$29.91	\$28.49
Aug-00	\$29.63	\$30.67	\$29.20	\$31.03	\$29.65
Sep-00	\$32.40	\$33.12	\$29.19	\$33.13	\$32.63
Oct-00	\$32.06	\$32.39	\$32.72	\$32.58	\$31.37
Nov-00	\$33.31	\$33.29	\$31.05	\$33.10	\$32.64
Dec-00	\$28.39	\$28.44	\$32.97	\$28.48	\$27.26
Jan-01	\$28.36	\$28.54	\$28.31	\$28.67	\$27.61
Feb-01	\$29.36	\$28.46	\$26.41	\$28.25	\$27.03
Mar-01	\$25.00	\$23.69	\$25.63	\$23.86	\$23.17
Apr-01	\$25.20	\$24.91	\$24.89	\$25.09	\$25.13
May-01	\$26.93	\$26.10	\$25.08	\$26.36	\$26.64
Jun-01	\$26.71	\$25.56	\$27.12	\$25.62	\$26.11
Jul-01	\$24.99	\$25.62	\$27.29	\$25.57	\$25.77
Aug-01	\$25.79	\$26.39	\$25.27	\$26.40	\$26.22
Sep-01	\$25.10	\$25.39	\$25.47	\$24.48	\$23.79
Oct-01	\$18.45	\$20.68	\$25.54	\$20.82	\$20.97
Nov-01	\$15.75	\$17.41	\$20.40	\$17.41	\$17.81
Dec-01	\$15.70	\$17.68	\$18.72	\$17.67	\$17.95
Jan-02	\$16.49	\$18.55	\$18.20	\$18.60	\$18.97
Feb-02	\$17.42	\$19.77	\$19.29	\$19.70	\$20.17
Mar-02	\$21.85	\$23.51	\$19.66	\$23.41	\$23.77

El_Monthly_Arm_s_length_Sales_p

Apr-02	\$22.25	\$25.31	\$23.16	\$25.44	\$25.73
May-02	\$24.60	\$26.48	\$25.65	\$26.43	\$26.54
Jun-02	\$24.08				
Jul-02	\$25.12				
Aug-02	\$25.25				
Sep-02	\$25.26				

El_Monthly_Arm_s_length_Sales_p

RIV	Platts Calendar
\$15.38	\$15.18
\$14.49	\$14.12
\$12.97	\$13.19
\$13.51	\$13.37
\$13.67	\$13.67
\$12.79	\$12.65
\$13.21	\$13.27
\$12.61	\$12.36
\$13.48	\$13.93
\$13.61	\$13.32
\$12.06	\$11.67
\$10.05	\$10.13
\$11.17	\$11.30
\$10.83	\$10.77
\$12.80	\$13.30
\$15.52	\$15.86
\$16.26	\$16.02
\$16.00	\$16.21
\$18.40	\$18.91
\$20.36	\$20.59
\$22.41	\$22.92
\$22.26	\$21.90
\$23.75	\$24.24
\$25.41	\$25.49
\$25.34	\$25.43
\$27.73	\$28.24
\$29.02	\$28.17
\$24.37	\$24.12
\$27.20	\$27.85
\$30.26	\$30.67
\$29.20	\$28.10
\$29.19	\$30.16
\$32.72	\$32.16
\$31.05	\$31.52
\$32.97	\$33.20
\$28.31	\$26.63
\$26.41	\$26.61
\$25.63	\$25.49
\$24.89	\$24.87
\$25.08	\$25.43
\$27.12	\$27.18
\$27.29	\$26.97
\$25.27	\$25.09
\$25.47	\$25.65
\$25.54	\$24.80
\$20.40	\$20.18
\$18.72	\$18.33
\$18.20	\$18.54
\$19.29	\$19.16
\$19.66	\$19.93
\$23.16	\$23.87

El_Monthly_Arm_s_length_Sales_p

\$25.65

\$25.82

\$26.00

GI Montney - Non-Arms - length - Sal

<u>Sales Price</u>	
Sales Price	1
Koch Netback	0.98991492
Platts Index - Trade Mo	0.695431913
NYMEX plus roll	0.983259145
NYMEX no roll	0.961264076
RIV	0.98362718
Platts Calendar	0.973636263

El_Monthly_Non_Arm_s_length_Sal

Sales Mo	Sales Price	Koch Netback	Platts Index - Trade Mo	NYMEX plus roll	NYMEX no roll	RIV
Sep-01	\$25.71	25.39	25.47	24.48	23.79	25.54
Oct-01	\$21.41	20.68	25.54	20.82	20.97	20.40
Nov-01	\$18.37	17.41	20.40	17.41	17.81	18.72
Dec-01	\$18.41	17.68	18.72	17.67	17.95	18.20
Jan-02	\$18.36	18.55	18.20	18.60	18.97	19.29
Feb-02	\$19.49	19.77	19.29	19.70	20.17	19.66
Mar-02	\$23.40	23.51	19.66	23.41	23.77	23.16
Apr-02	\$25.36	25.31	23.16	25.44	25.73	25.65
May-02	\$26.55					
Jun-02	\$24.88					
Jul-02	\$26.04					
Aug-02	\$27.38					
Sep-02	\$30.20					

El_Monthly_Non_Arm_s_length_Sal

Platts Calendar

24.80
20.18
18.33
18.54
19.16
19.93
23.87
25.82

HLS - Monthly - Arm - 5 - length - Sales

<u>Sales Price</u>	
Sales Price	1
Koch Netback	0.901527638
Platts Index Trade Mo	0.88484922
NYMEX plus roll	0.899909781
NYMEX no roll	0.895664691
RIV methodology	0.903217615
Platts Index - Calendar	0.898546047

HLS_Monthly_Arm_s_length_Sales_

Sales Mo	Sales Price	Koch Netback	Platts Index	Trade Mo	NYMEX plus roll	NYMEX no roll
Jan-98	\$15.46	\$16.20		\$18.20	\$16.21	\$16.48
Feb-98	\$14.55	\$15.30		\$16.29	\$15.34	\$15.59
Mar-98	\$13.22	\$13.93		\$15.61	\$13.99	\$14.27
Apr-98	\$13.34	\$14.01		\$13.79	\$13.91	\$14.38
May-98	\$13.40	\$13.23		\$14.40	\$13.41	\$13.85
Jun-98	\$11.78	\$12.45		\$14.80	\$12.57	\$13.43
Jul-98	\$12.20	\$12.55		\$13.35	\$12.56	\$13.57
Aug-98	\$11.47	\$12.44		\$13.51	\$12.29	\$12.80
Sep-98	\$13.20	\$14.04		\$13.03	\$14.01	\$14.42
Oct-98	\$12.72	\$14.02		\$14.37	\$13.96	\$14.22
Nov-98	\$11.16	\$12.17		\$14.11	\$12.28	\$12.47
Dec-98	\$9.59	\$10.44		\$12.93	\$10.59	\$10.93
Jan-99	\$10.60	\$11.72		\$10.90	\$11.69	\$12.20
Feb-99	\$10.10	\$11.39		\$11.93	\$11.43	\$11.60
Mar-99	\$12.36	\$13.65		\$11.17	\$13.66	\$13.79
Apr-99	\$14.91	\$15.89		\$12.94	\$15.98	\$16.08
May-99	\$15.78	\$16.83		\$15.96	\$16.81	\$16.78
Jun-99	\$16.05	\$16.94		\$16.83	\$17.08	\$16.81
Jul-99	\$17.98	\$18.66		\$16.49	\$18.84	\$18.91
Aug-99	\$19.35	\$20.43		\$19.07	\$20.52	\$20.61
Sep-99	(\$1.39)	\$23.47		\$20.93	\$23.59	\$23.67
Oct-99	\$21.30	\$22.46		\$22.82	\$22.35	\$22.16
Nov-99	\$23.40	\$24.51		\$22.41	\$24.35	\$24.09
Dec-99	\$24.90	\$26.36		\$24.39	\$26.34	\$26.08
Jan-00	\$26.33	\$27.93		\$26.31	\$28.27	\$27.33
Feb-00	\$28.60	\$30.06		\$26.63	\$30.01	\$28.93
Mar-00	\$29.43	\$31.22		\$29.00	\$31.18	\$29.94
Apr-00	\$25.69	\$26.55		\$29.76	\$26.74	\$24.66
May-00	\$28.30	\$29.16		\$25.25	\$28.79	\$27.92
Jun-00	\$30.48	\$31.74		\$28.15	\$31.89	\$31.50
Jul-00	\$30.21	\$31.00		\$30.99	\$30.63	\$29.21
Aug-00	\$30.66	\$31.87		\$30.40	\$32.23	\$30.85
Sep-00	\$33.13	\$34.53		\$30.60	\$34.54	\$34.04
Oct-00	\$32.71	\$33.63		\$33.95	\$33.81	\$32.61
Nov-00	\$33.79	\$34.43		\$32.19	\$34.24	\$33.79
Dec-00	\$29.13	\$30.28		\$34.81	\$30.32	\$29.10
Jan-01	\$28.43	\$30.07		\$29.83	\$30.20	\$29.14
Feb-01	\$26.65	\$30.71		\$28.66	\$30.50	\$29.28
Mar-01	\$23.96	\$26.31		\$28.25	\$26.48	\$25.79
Apr-01	\$23.43	\$26.22		\$26.21	\$26.41	\$26.44
May-01	\$24.77	\$27.68		\$26.66	\$27.94	\$28.22
Jun-01	\$26.88	\$27.46		\$29.02	\$27.51	\$28.01
Jul-01	\$25.98	\$26.78		\$28.45	\$26.74	\$26.93
Aug-01	\$26.20	\$27.24		\$26.12	\$27.25	\$27.07
Sep-01	\$25.77	\$26.28		\$26.36	\$25.37	\$24.68
Oct-01	\$21.40	\$22.06		\$26.92	\$22.20	\$22.35
Nov-01	\$18.76	\$18.71		\$21.70	\$18.71	\$19.11
Dec-01	\$18.59	\$18.95		\$19.99	\$18.94	\$19.22
Jan-02	\$17.74	\$19.20		\$18.86	\$19.25	\$19.62
Feb-02	\$19.87	\$20.39		\$19.92	\$20.33	\$20.80
Mar-02	\$23.72	\$24.26		\$20.40	\$24.16	\$24.52

HLS_Monthly_Arm_s_length_Sales_

Apr-02	\$25.18	\$25.93	\$23.77	\$26.05	\$26.34
May-02	\$26.43	\$27.26	\$26.43	\$27.21	\$27.32
Jun-02	\$24.78				
Jul-02	\$25.96				
Aug-02	\$27.42				
Sep-02	\$28.50				

HLS_Monthly_Arm_s_length_Sales_

RIV methodology	Platts Index - Calendar
\$16.29	\$16.10
\$15.61	\$15.24
\$13.79	\$14.00
\$14.40	\$14.28
\$14.80	\$14.84
\$13.35	\$13.07
\$13.51	\$13.62
\$13.03	\$12.85
\$14.37	\$14.79
\$14.11	\$13.83
\$12.93	\$12.61
\$10.90	\$11.00
\$11.93	\$11.98
\$11.17	\$11.06
\$12.94	\$13.48
\$15.96	\$16.31
\$16.83	\$16.64
\$16.49	\$16.71
\$19.07	\$19.58
\$20.93	\$21.19
\$22.82	\$23.25
\$22.41	\$22.09
\$24.39	\$24.96
\$26.31	\$26.34
\$26.63	\$26.86
\$29.00	\$29.43
\$29.76	\$28.93
\$25.25	\$25.02
\$28.15	\$28.80
\$30.99	\$31.42
\$30.40	\$29.34
\$30.60	\$31.61
\$33.95	\$33.39
\$32.19	\$32.72
\$34.81	\$35.03
\$29.83	\$28.18
\$28.66	\$28.97
\$28.25	\$28.09
\$26.21	\$26.09
\$26.66	\$27.11
\$29.02	\$29.05
\$28.45	\$28.03
\$26.12	\$25.97
\$26.36	\$26.56
\$26.92	\$26.25
\$21.70	\$21.50
\$19.99	\$19.51
\$18.86	\$19.12
\$19.92	\$19.75
\$20.40	\$20.68
\$23.77	\$24.51

HLS_Monthly_Arm_s_length_Sales_

\$26.43
\$26.42

\$26.56

HLS - Monthly Non - Arm - s - length - Sa

<u>Sales Price</u>	
Sales Price	1
Koch Netback	0.991268847
Platts Index Trade Mo	0.612120524
NYMEX plus roll	0.993421265
NYMEX no roll	0.983133555
RIV methodology	0.98379888
Platts Index - Calendar	0.991711794

HLS_Monthly_Non_Arm_s_length_Sa

Sales Mo	Sales Price	Koch Netback	Platts Index	Trade M	NYMEX plus roll	NYMEX no roll
Sep-01	\$25.71	\$26.28		\$26.36	\$25.37	\$24.68
Oct-01	\$21.48	\$22.06		\$26.92	\$22.20	\$22.35
Nov-01	\$18.43	\$18.71		\$21.70	\$18.71	\$19.11
Dec-01	\$18.47	\$18.95		\$19.99	\$18.94	\$19.22
Jan-02	\$18.46	\$19.20		\$18.86	\$19.25	\$19.62
Feb-02	\$19.59	\$20.39		\$19.92	\$20.33	\$20.80
Mar-02	\$23.50	\$24.26		\$20.40	\$24.16	\$24.52
Apr-02	\$26.60	\$25.93		\$23.77	\$26.05	\$26.34
May-02	\$27.75					
Jun-02	\$26.40					
Jul-02	\$25.82					
Aug-02	\$27.28					

HLS_Monthly_Non_Arm_s_length_Sa

RIV methodology	Platts Index - Calendar
\$26.92	\$26.25
\$21.70	\$21.50
\$19.99	\$19.51
\$18.86	\$19.12
\$19.92	\$19.75
\$20.40	\$20.68
\$23.77	\$24.51
\$26.43	\$26.56

Permian - Monthly - Arm - s - length - sa

<i>AL Sales Price</i>	
AL Sales Price	1
Koch Posting WT/NM Intermediate	0.98851536
WTI NYMEX Month 1	0.986666735
WTI NYMEX Month 2	0.980355906
WTI NYMEX Month 3	0.973854852
WTI NYMEX Month 1 - Trade Month	0.983006572
WTI NYMEX Month 2 Trade Month	0.976796544
WTI NYMEX Month 3 Trade Month	0.969825089
Platts Calendar - WTI - Cushing	0.628045369
Platts Trading - WTI - Cushing	0.617293975

Permian_Monthly_Arm_s_length_Sa

Sales Mo	AL Sales P Koch Posting	WT/NM Intermediate	WTI NYMEX Month 1	WTI NYMEX Month 2
Jan-98	\$15.76	\$14.56	\$16.73	\$16.92
Feb-98	\$15.04	\$13.88	\$16.08	\$16.32
Mar-98	\$13.04	\$12.76	\$15.04	\$15.37
Apr-98	\$14.16	\$13.13	\$15.46	\$15.88
May-98	\$13.46	\$12.52	\$14.93	\$15.68
Jun-98	\$11.89	\$11.06	\$13.67	\$14.48
Jul-98	\$12.41	\$11.51	\$14.09	\$14.40
Aug-98	\$11.99	\$10.88	\$13.38	\$13.68
Sep-98	\$13.54	\$12.39	\$14.97	\$15.13
Oct-98	\$13.19	\$11.87	\$14.42	\$14.57
Nov-98	\$11.71	\$10.34	\$13.04	\$13.38
Dec-98	\$9.72	\$8.60	\$11.31	\$11.64
Jan-99	\$11.03	\$9.84	\$12.49	\$12.54
Feb-99	\$10.77	\$9.29	\$12.02	\$12.14
Mar-99	\$13.32	\$12.04	\$14.68	\$14.74
Apr-99	\$15.99	\$14.66	\$17.30	\$17.17
May-99	\$16.63	\$15.26	\$17.77	\$17.67
Jun-99	\$16.75	\$15.38	\$17.92	\$18.02
Jul-99	\$18.78	\$17.38	\$20.10	\$20.20
Aug-99	\$20.03	\$18.52	\$21.28	\$21.38
Sep-99	\$22.48	\$20.94	\$23.79	\$23.55
Oct-99	\$21.74	\$19.91	\$22.67	\$22.64
Nov-99	\$23.97	\$22.24	\$24.77	\$24.39
Dec-99	\$25.26	\$23.22	\$26.09	\$25.45
Jan-00	\$26.61	\$24.05	\$27.01	\$26.12
Feb-00	\$29.09	\$26.53	\$29.30	\$28.19
Mar-00	\$29.75	\$27.19	\$29.89	\$28.57
Apr-00	\$25.93	\$22.77	\$25.54	\$24.87
May-00	\$28.49	\$26.30	\$28.81	\$28.46
Jun-00	\$30.24	\$28.79	\$31.53	\$30.18
Jul-00	\$30.09	\$27.18	\$29.72	\$29.01
Aug-00	\$30.71	\$28.24	\$31.14	\$30.59
Sep-00	\$33.21	\$30.86	\$33.87	\$33.08
Oct-00	\$32.56	\$29.96	\$32.93	\$32.36
Nov-00	\$33.43	\$31.45	\$34.26	\$33.29
Dec-00	\$27.99	\$25.38	\$28.40	\$27.75
Jan-01	\$28.70	\$26.40	\$29.26	\$28.12
Feb-01	\$29.29	\$26.71	\$29.64	\$29.36
Mar-01	\$25.90	\$24.23	\$27.27	\$27.43
Apr-01	\$19.49	\$24.49	\$27.62	\$27.97
May-01	\$26.35	\$25.53	\$28.68	\$29.09
Jun-01	\$25.52	\$24.43	\$27.58	\$27.73
Jul-01	\$25.01	\$23.36	\$26.47	\$26.17
Aug-01	\$25.98	\$24.10	\$27.31	\$26.84
Sep-01	\$25.65	\$23.36	\$25.69	\$25.96
Oct-01	\$20.53	\$19.02	\$22.21	\$22.51
Nov-01	\$17.92	\$16.47	\$19.67	\$19.93
Dec-01	\$17.67	\$16.28	\$19.40	\$19.71
Jan-02	\$17.90	\$16.52	\$19.73	\$20.14
Feb-02	\$18.91	\$17.61	\$20.76	\$21.02
Mar-02	\$22.82	\$21.33	\$24.44	\$24.68

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Apr-02	\$24.46	\$22.95	\$26.26	\$26.29
May-02	\$25.54	\$23.79	\$26.95	\$26.50
Jun-02	\$24.86			
Jul-02	\$25.49			
Aug-02	\$26.96			
Sep-02	\$29.06			

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WTI NYMEX Month 3	WTI NYMEX Month 1 - Trade	WTI NYMEX Month 2 Trade
\$17.13	\$17.18	\$17.37
\$16.60	\$16.50	\$16.69
\$15.70	\$14.68	\$15.02
\$16.21	\$15.79	\$16.13
\$16.13	\$15.14	\$15.86
\$15.10	\$13.85	\$14.66
\$14.72	\$14.13	\$14.52
\$14.00	\$13.60	\$13.91
\$15.30	\$14.49	\$14.68
\$14.75	\$14.79	\$14.93
\$13.66	\$13.63	\$13.90
\$11.95	\$11.36	\$11.75
\$12.64	\$12.14	\$12.27
\$12.27	\$12.07	\$12.16
\$14.72	\$13.75	\$13.85
\$17.03	\$16.54	\$16.53
\$17.54	\$18.07	\$17.88
\$18.01	\$17.55	\$17.63
\$20.13	\$19.47	\$19.58
\$21.31	\$20.92	\$21.02
\$23.14	\$22.76	\$22.65
\$22.45	\$23.29	\$23.14
\$23.86	\$23.79	\$23.65
\$24.63	\$26.10	\$25.44
\$25.36	\$26.41	\$25.58
\$27.22	\$28.64	\$27.69
\$27.56	\$31.01	\$29.35
\$24.60	\$26.18	\$25.42
\$27.89	\$27.65	\$27.42
\$29.31	\$30.78	\$29.62
\$28.56	\$31.26	\$30.12
\$30.07	\$29.76	\$29.38
\$32.54	\$34.13	\$33.14
\$31.89	\$32.49	\$32.16
\$32.33	\$33.67	\$32.72
\$27.29	\$31.41	\$30.58
\$27.46	\$28.27	\$27.24
\$28.91	\$29.87	\$29.37
\$27.40	\$27.78	\$27.84
\$28.08	\$27.29	\$27.54
\$29.13	\$28.46	\$28.93
\$27.70	\$28.31	\$28.51
\$26.03	\$26.42	\$26.28
\$26.77	\$27.25	\$26.59
\$26.06	\$27.15	\$27.30
\$22.64	\$22.54	\$22.89
\$20.08	\$20.67	\$20.90
\$19.90	\$19.01	\$19.31
\$20.37	\$19.91	\$20.30
\$21.15	\$20.24	\$20.54
\$24.73	\$23.11	\$23.38

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\$26.08	\$25.89	\$26.04
\$26.30	\$27.39	\$26.79

Permian_Monthly_Arm_s_length_Sa

WTI NYMEX Month 3 Trade Month	Platts Calendar - WTI - Cushing	Platts Trading - WTI - Cushing
\$17.56	\$19.14	\$18.97
\$16.92	\$19.67	\$19.48
\$15.41	\$19.30	\$19.32
\$16.41	\$20.65	\$20.27
\$16.28	\$20.40	\$20.49
\$15.28	\$18.75	\$19.05
\$14.87	\$16.79	\$17.13
\$14.23	\$15.87	\$15.87
\$14.89	\$14.18	\$14.41
\$15.09	\$15.17	\$14.96
\$14.12	\$14.36	\$14.49
\$12.10	\$13.23	\$13.49
\$12.42	\$13.57	\$12.98
\$12.27	\$13.13	\$13.22
\$13.86	\$13.23	\$13.00
\$16.47	\$14.61	\$14.63
\$17.67	\$13.32	\$13.38
\$17.60	\$11.24	\$11.40
\$19.54	\$11.54	\$11.35
\$20.95	\$11.63	\$11.69
\$22.39	\$13.23	\$12.49
\$22.83	\$16.17	\$15.64
\$23.30	\$17.74	\$17.70
\$24.60	\$17.13	\$16.83
\$24.83	\$18.96	\$18.47
\$26.81	\$20.38	\$20.17
\$28.09	\$21.98	\$21.39
\$25.09	\$23.55	\$23.76
\$26.93	\$22.74	\$22.34
\$28.84	\$25.90	\$25.65
\$29.40	\$25.83	\$25.47
\$28.99	\$28.48	\$28.06
\$32.50	\$30.42	\$30.27
\$31.81	\$24.79	\$25.65
\$31.90	\$26.25	\$25.47
\$29.87	\$29.52	\$28.82
\$26.67	\$30.88	\$31.07
\$28.82	\$28.24	\$28.27
\$27.74	\$32.59	\$31.91
\$27.59	\$32.19	\$32.31
\$29.01	\$32.76	\$32.72
\$28.48	\$31.63	\$32.63
\$26.16	\$27.21	\$26.90
\$26.50	\$29.38	\$29.63
\$27.29	\$26.94	\$27.34
\$23.04	\$26.40	\$26.01
\$21.03	\$27.42	\$27.15
\$19.51	\$28.32	\$28.16
\$20.52	\$26.59	\$26.93
\$20.70	\$26.50	\$26.26
\$23.45	\$27.13	\$27.02

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\$25.91	\$22.49	\$23.72
\$26.52		\$19.68

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